



## Greater Newark Smart Port Regional Growth Cluster

### Narrative Description

**Vision:** The City of Newark, NJ, and its coalition members and partners seek to optimize the Port of New York and New Jersey's (PoNYNJ) facilities located in Newark and Elizabeth, as well as the transportation systems extending from this hub. Development and implementation of smart and resilient critical infrastructure will result from our project's focus on advanced engineering and information technologies for freight handling, transportation, tracking and delivery. The proposed innovations will create a massive number of high-paying new jobs and business opportunities in a region with socioeconomically disadvantaged communities, and will support the existing union workforce while spurring job growth in and around the port and making a sustainable impact on the regional and state economies.

**Economic Opportunity:** The hub of the regional growth cluster is Port Newark/Elizabeth-Port Authority Marine Terminal (hereinafter the "Port"), a major component of the PoNYNJ located in Newark and Elizabeth, respectively, just east of the New Jersey Turnpike and Newark Liberty International Airport. This is the largest container port on the East Coast and the second largest in the U.S. It is an economic engine supporting a third of the nation's Gross Domestic Product (GDP) within 250 miles. The Port accounts for 75-80% of the PoNYNJ's total capacity. The PoNYNJ has access to 46.3 million customers within a four-hour drive and 1 billion square feet of warehouse and distribution space within 50 miles. In New Jersey alone, the Port supports an estimated 205,000 direct jobs, 344,370 total jobs, over \$29 billion in state personal income, and more than \$80.4 billion in business income.

Our vision for the cluster is aligned with existing strategic plans. The PoNYNJ's Master Plan 2050 calls for the full visibility and optimization of the supply chain, investment in next-generation green engineering and communications-based infrastructure for future productivity gains, installation and monitoring of state-of-the art cybersecurity measures and partnering with stakeholders to become early adopters of advanced information technology. The Regional Comprehensive Economic Development Strategy (CEDS) for North Jersey calls for leveraging the region's location and its goods-movement facilities and infrastructure as a major source of economic growth and for maximizing the efficiency and reliability of freight movement by truck, rail, maritime, and air routes.

The Port is part of New Jersey's second largest industry sector, Transportation, Distribution and Logistics (TDL). In 2019, average private sector employment in TDL made up 12% of all private sector workers in New Jersey, compared to 9% nationwide. TDL contributed \$67 billion to the state's GDP in 2019, the sixth highest amount per state nationwide. Emanating from the hub formed by the Port is a complex and critically important transportation system, including Newark Liberty International Airport (the sixth busiest airport in the U.S.), the Northeast Corridor rail lines, I-95, I-78, and other state and local routes.

The emergence of Ultra Large Container Vessels has led to record volumes of cargo being handled at the Port. Container demand at the Port is projected to increase from 7.2 million 20-foot equivalent units (TEUs) in 2018 to between 12 million and 17 million TEUs by 2050. Port users are searching for ways to manage the larger volume of cargo, including transporting this cargo more expeditiously on and off the Port. Over the next 30 years, it is forecast that jobs attributable to cargo/warehouse operations will more than double. The Port has an opportunity to enhance its position within the global marketplace and efficiently respond to the increasing cargo volumes and vessel sizes. To capitalize on this opportunity, the coalition members and partners



## Greater Newark Smart Port Regional Growth Cluster

must invest in equipment, infrastructure, technologies, and a workforce that is flexible and adaptable to future job changes.

**Pandemic Impact:** New Jersey is among the states hardest hit by the COVID-19 pandemic, and in its early months, recorded one of the highest rates of per capita infection. The effect of the pandemic on the state's economy continues to be felt through the extraordinary number of business closures recorded, leading to persistent unemployment. During the second and third quarters of 2020, approximately 21% of New Jersey businesses closed, an increase of more than five times the normal rate, one of the highest rates in the country. This rise in business closings has had an outsized impact on the state's labor market, the effects of which continue to be reflected in the state's 7.2% unemployment rate and 7% drop in employment.

With the help of a surge of federal fiscal stimulus funding, the state's GDP has rebounded to the pre-pandemic level, but now that government transfer payments are contracting, the state's employment gap will exert downward pressure on the economy, creating the need for job development and training to get the economy back to its full employment level.

In addition to state-level impacts, the pandemic's effect on the distressed communities of the greater Newark region has been significant. Historically, the cities of Newark and Elizabeth have struggled with poverty, unemployment, high foreclosure rates, and housing affordability. Newark's median household income in 2019 was \$35,199; its unemployment rate was 11%; and its poverty rate was 24%. Elizabeth's respective numbers were \$48,407; 9%; and 14%. Transportation and Warehousing is the largest employment sector in Newark (14% of residents) and Elizabeth (16% of residents). As a result of the pandemic, 16,000 Newark residents lost their jobs, including 3,700 job losses at the Port and Newark Airport, representing \$760 million in lost earnings.

The pandemic also abruptly and permanently altered demand on the freight system and shifted supply chain strategies, with significantly heightened consumption of certain products and reduced or even halted consumption of others. The pandemic has increased the importance of information technologies to pivot quickly, monitor conditions, and address the needs of remote work; exacerbated workforce shortages in domestic production and distribution that impede movement of goods; and efficient movement of goods. As a result of these significant disruptions, large negative economic impacts and jobs lost in the region, there is a need and opportunity to develop smarter and more technologically-resilient port infrastructure.

**Proposal Outcomes:** Our vision and plan are designed to address the following significant needs and to support job growth, equity, and economic development in the region and state by: 1. Continuously developing capacity to handle larger cargo volume, freight tracking, and delivery efficiency with environmentally friendly smart port operations; 2. Enhancing homeland, port, and cyberinfrastructure security; 3. Implementing smart monitoring, scheduling, and communication systems to track the inventory of available resources and to support infrastructure facilities, such as warehouse storage and loading/unloading capacity; 4. Developing improved and more effective transportation systems for the workforce to commute to the Port and associated facilities; 5. Initiating workforce training and talent management to improve equity, social and environmental justice, and representation of underrepresented communities, especially those adjacent to the Port, to support sustainable growth in the blue- and new-collar workforce as well as STEM-related jobs in the region; and 6. Developing businesses with an innovation-to-market ecosystem to facilitate entrepreneurship and commercialization of



## Greater Newark Smart Port Regional Growth Cluster

innovations, including support and mentoring specifically for women, underrepresented minority, and low-income innovators.

**Greater Newark Smart Port Regional Coalition Members:** Individually, the coalition members have vested interest in the success of the proposed regional growth cluster and have spent decades actively engaged in various related sectors. Working under a shared vision, this coalition's strength and impact is notable. Coalition members include:

- The **City of Newark** (lead institution), the most populous city in New Jersey, owns both the Port Newark property and the Newark Liberty International Airport property, both of which are leased to the PoNYNJ.
- The **City of Elizabeth**, the state's 4<sup>th</sup> most populous city, is home to the Elizabeth-Port Authority Marine Terminal and a portion of Newark Liberty International Airport.
- The **Port Authority of New York and New Jersey** (PANYNJ) operates the PoNYNJ as well as Newark Liberty International Airport.
- **New Jersey Institute of Technology** (NJIT) is New Jersey's public polytechnic university, an anchor institution in Newark, and a driver of equity in the state's higher education sector, educating 60% of the African American and Hispanic engineers who graduate from New Jersey colleges and universities. NJIT is ranked No. 1 nationally by Forbes for the upward economic mobility of its lowest-income students.
- **Rutgers**, the State University of New Jersey, stands among America's highest-ranked, most diverse public research universities and is the oldest and largest public university in the New York/New Jersey metropolitan area.
- The **New Jersey Economic Development Authority** (NJEDA) grows the state's economy and increases equitable access to opportunity by supporting high-quality job creation, catalyzing investment, and fostering vibrant, inclusive community development.
- **North Jersey Transportation Planning Authority** is responsible for preparing the regional transportation plan for northern New Jersey and for programming about \$12 billion in transportation investments.

Additionally, as evidenced by the letters of support included in this application, a multitude of cluster partners have joined this coalition, including colleges, state and local government entities, unions, and private sector partners.

**Smart Port Regional Growth Cluster Framework and Component Projects:** The proposed Smart Port framework consists of three focus areas. They are listed below with their proposed component projects.

- 1) **Workforce Development and Training Programs (WDTPs):** Comprehensive workforce development and training programs will promote equity among underrepresented communities, including pipelines for student internships and co-ops. The programs will include environmental-justice based talent recruitment in the blue- and new-collar workforce, and STEM jobs related to smart port operations and technology management systems. These jobs will include IT managers, systems managers, robotics technicians, information processing employees, cargo handlers, and frontline supervisors – jobs with a higher wage-earning potential. Training will be aligned with utility, IT, security, and robotics industry competencies to ensure success. The programs will support job growth and recruiting for new jobs created through the deployment of smart port technologies and infrastructure. NJIT,



## Greater Newark Smart Port Regional Growth Cluster

Rutgers, and PANYNJ will co-lead this cluster focus involving other coalition members and partners.

- 2) **Research and Technology Innovation Center (RTIC):** The RTIC will pursue technology development projects using existing and new methods in assisted freight handling; intelligent transportation systems with tracking, storage and optimization of delivery scheduling; environmentally friendly resources and utilities including green energy; data-driven supply chain management systems; and real-time data analytics-based cyberinfrastructure support systems. The proposed innovations would create new jobs with integrated team training opportunities at all skill levels, including freight handling and technology installation support, construction workers, technicians, information processing and management personnel, data analysts, and managers. The technology innovations and attendant training will be applicable at other ports and will result in future technology transfer opportunities. NJIT, PANYNJ, and North Jersey Transportation Planning Authority will lead this cluster area of focus involving other coalition members and partners. The following are proposed projects the RTIC will pursue:

- Smart Port Operations using advanced engineering and information technologies to investigate new methods, including advanced technologies such as the Internet of Things, radio frequency identification, the Global Positioning System, and equipment that will allow the Port to achieve operational excellence.
- Smart Transportations Systems that will deploy and integrate a network of sensors and communication devices on roadways, terminal gates, and on-dock rail facilities to improve efficient utilization of resources, workforce, machinery, and land, while spurring gains in energy conservation and emissions reductions.
- A Smart Port with greener utilities and digital operational technologies aimed at integrating best practices to decrease the carbon footprint. The project will entail building efficient digital layers with real time information to control every operational process. A data analytics platform will be used to profile and analyze different processes, along with associated operation and planning simulation models, enabling improved and effective decision-making processes and energy-utilization efficiency.
- Port Resiliency, which will address weather disruptions and flood hazard management in the Port by creating a model that simulates these events and their impacts and suggests design solutions.
- Smart Port and Cyberinfrastructure Security Systems (SPCS) will be developed to ensure Port security and resiliency for the largest northeastern gateway port. SPCS will create a resilient surveillance network to detect and predict security risks and advanced cybersecurity technologies to secure port sensor data.

- 3) **Technology Deployment, Business Development and Innovation to Market Ecosystem (TBIE):** The new technology and operational management innovations developed in RTIC will provide the basis for commercialization and new business development in the region. TBIE will be focused on providing mentoring and entrepreneurship opportunities to low-income, underrepresented minority, and women innovators and entrepreneurs through regional and state resources, including the New Jersey Innovation Institute (NJII), NJEDA, New Jersey Commission on Science, Innovation and Technology, VentureLink and other incubators. TBIE will develop Market Port, an online property marketplace that will create and maintain an inventory of suitable properties for port-related businesses and market those properties in an online platform aimed at the industrial and commercial real estate



## Greater Newark Smart Port Regional Growth Cluster

community. The City of Newark, City of Elizabeth, NJIT and NJEDA will co-lead this cluster area of focus involving other coalition members and partners.

**Metrics of Success:** Preliminary metrics of success include an enhanced skilled workforce with at least a 10% increase in engagement with low-income and underrepresented communities to provide better job opportunities and higher wages; creation of new businesses; increased diversity among suppliers and businesses; increased efficiency in port operations with green energy utilization; better diversified land use and operations; improved safety and security; and reduced environmental impact, emissions and a reduced carbon footprint.

**Alignment with USED A Priorities:** The proposed regional growth cluster aligns with EDA's Recovery and Resilience Investment Priority, as it serves to help the region bounce back from COVID-19 pandemic impacts and strengthen its transportation and delivery systems using technology to withstand future disruptions, whether they be from another pandemic, climate change, or deliberate human disruption. The cluster also aligns with EDA's Equity, Workforce Development, and Environmentally-Sustainable Development priorities.

**Complementary Investments and Matching Funds for Phase 2:** Billions of dollars in investments have been and continue to be made to the Port and the off-port surface transportation system that supports it. From 2017-2026, PoNYNJ will invest \$1.1 billion in its port facilities. Recently, the PANYNJ was awarded \$44 million from the U.S. Department of Transportation to modernize a three-mile section of road at the Port's entrance. Additionally, millions of dollars in other investments are being made to the NJ Turnpike and interstate roadways that support freight movement. The cluster would leverage these investments with EDA and matching funds from cluster members and partners. This could include state funds, city funds, and private sector contributions. We are confident that a full complement of matching funds will be secured for the Phase 2 application.

**Barriers to Implementation:** Addressing the priorities of the multitude of coalition members and partners involved in this cluster may present a challenge, which will be mitigated through open discussions with stakeholders throughout Phase 1 "Smart Port Coordinating Plan" tasks. Another barrier would be associated with transdisciplinary technology system integration for smart port operations dealing with assisted handling, green energy, information management, and port and data security. System-level technology integration and operational communications will be addressed through the coordination of the research and technology innovation activities in the RTIC. Connecting with historically excluded populations is another barrier that would be mitigated through continued engagement with community-based organizations and unions to develop effective outreach strategies.

**Timeline:** The timeline for completion of Phase 1 activities is presented in the budget narrative provided as an attachment to this application. The timeline for completion of the Phase 2 projects fits within the 24-months allotted for non-construction projects.